CLAIMS

I claim:

1. A method for determining the dimensional accuracy of a translated three-dimensional computer model relative to a master three-dimensional computer model, the method comprising:

obtaining a master model geometric property, the master model geometric property being a volume or an area of the master model;

obtaining a translated model geometric property, the translated model geometric property being a volume of the translated model when the master model geometric property is the volume of the master model, the translated model geometric property being an area of the translated model when the master model geometric property is the area of the master model;

determining a Z score based on the master model geometric property and the translated model geometric property;

comparing the determined Z score to a pre-selected value;

determining the translated model to be sufficiently dimensionally accurate when the determined Z score is greater than or equal to the pre-selected value; and

determining the translated model to be insufficiently dimensionally accurate when the determined Z score is less than the pre-selected value.

2. The method of claim 1 further comprising:

obtaining a number of master model faces, a number of master model edges and a number of master model solid bodies;

obtaining a number of translated model faces, a number of translated model edges and a number of translated model solid bodies;

comparing the number of translated model faces to the number of master model faces;

comparing the number of translated model edges to the number of master model edges;

comparing the number of translated model solid bodies to the number of master model solid bodies; and

determining a Z score based on the master model geometric property and the translated model geometric property when the number of translated model faces equals the number of master model faces, the number of translated model edges equals the number of master model edges, and the number of translated model solid bodies equals the number of master model solid bodies.

3. The method of claim 1 wherein determining a Z score based on the master model geometric property and the translated model geometric property comprises:

determining an accuracy probability based on the master model geometric property and the translated model geometric property; and

determining an error factor based on the determined accuracy probability.

4. The method of claim 3 wherein determining an accuracy probability includes determining an accuracy probability using an equation that is at least substantially similar to equation (1).

5. The method of claim 3 wherein determining an error factor includes determining an error factor using an equation that is at least substantially similar to equation (2).

6. The method of claim 1 wherein the determined Z score corresponds to a number of standard deviations between a process mean value and a specified process limit.

7. The method of claim 1 wherein the translated three-dimensional computer model is generated by translating the master three-dimensional computer model from a primary CAD system to an alternate CAD system.

8. The method of claim 7 wherein the primary CAD system is a Unigraphics CAD system.

9. The method of claim 1 wherein determining a Z score includes determining a Z score using an equation that is at least substantially similar to equation (3).

10. A method for determining the dimensional accuracy of a second computer model relative to a first computer model, the method comprising:

obtaining a first geometric property of the first computer model;

obtaining a second geometric property of the second computer model; and

determining a Z score based on the first and second geometric properties.

11. The method of claim 10 wherein:

the first geometric property is a volume or an area of the first model;

when the first geometric property is the volume of the first model, the second geometric property is a volume of the second model; and

when the first geometric property is the area of the first model, the second geometric property is an area of the second model.

12. The method of claim 10 wherein the first and second computer models are three-dimensional CAD models.

13. The method of claim 10 further comprising:

comparing the determined Z score to a pre-selected value;

determining the second computer model to be sufficiently dimensionally accurate when the determined Z score is greater than or equal to the pre-selected value; and

determining the second computer model to be insufficiently dimensionally accurate when the determined Z score is less than the pre-selected value.

14. The method of claim 10 wherein determining a Z score based on the first and second geometric properties comprises:

determining an accuracy probability based on the first and second geometric properties; and

determining an error factor based on the determined accuracy probability.

15. The method of claim 14 wherein determining an accuracy probability includes determining an accuracy probability using an equation that is at least substantially similar to equation (1).

16. The method of claim 14 wherein determining an error factor includes determining an error factor using an equation that is at least substantially similar to equation (2).

17. The method of claim 10 wherein the determined Z score corresponds to a number of standard deviations between a process mean value and a specified process limit.

18. The method of claim 10 wherein determining a Z score includes determining a Z score using an equation that is at least substantially similar to equation (3).

19. A method in a computer system for determining the dimensional accuracy of a translated model relative to a master model, the method comprising:

receiving a master model geometric property;

receiving a translated model geometric property;

determining an accuracy probability between the received translated model geometric property and the received master model geometric property;

determining an error factor based on the accuracy probability; and

determining a Z score based on the error factor.

20. The method of claim 19 further comprising:

comparing the determined Z score to a pre-selected value;

when the determined Z score is greater than or equal to the pre-selected value:

determining the translated model to be sufficiently dimensionally accurate; and

when the determined Z score is less than the pre-selected value:

determining the translated model to be insufficiently dimensionally accurate.

21. The method of claim 19 wherein the determined Z score is automatically calculated using an equation that is at least substantially similar to equation (3).

22. The method of claim 19 wherein the determined accuracy probability is automatically calculated using an equation that is at least substantially similar to equation (1).

23. The method of claim 19 wherein the determined error factor is automatically calculated using an equation that is at least substantially similar to equation (2).

24. The method of claim 19 wherein:

the received master model geometric property is a volume of the master model; and

the received translated model geometric property is a volume of the translated model.

25. The method of claim 19 wherein:

the received master model geometric property is an area of the master model; and

the received translated model geometric property is an area of the translated model.

26. The method of claim 19 wherein the received translated model geometric property is the same property as the received master model geometric property.

27. A computer-readable medium containing a display description for determining a Z score, the Z score being associated with a translated computer model, the translated computer model being generated by translating a master computer model from a primary computer system to an alternate computer system, the display description comprising:

a master model property field for receiving a master model geometric property;

a translated model property field for receiving a translated model geometric property; and

a Z score field for displaying a Z score that is automatically generated based on the received master model property and the received translated model property.

28. The computer-readable medium of claim 27 wherein the display description further comprises:

a model name field for receiving a name of the master model; and

a percentage of deviation field for displaying a percentage of deviation that is automatically generated based on the received master model property and the received translated model property.

29. The computer-readable medium of claim 27 wherein the display description further comprises:

a percentage of deviation field for displaying a percentage of deviation that is automatically generated based on the received master model property and the received translated model property;

an accuracy probability field for displaying an accuracy probability that is automatically generated based on the received master model property and the received translated model property; and

an error factor field for displaying an error factor that is automatically generated based on the accuracy probability.

30. A computer system for determining the dimensional accuracy of a translated computer model relative to a master computer model, the translated model being

generated by translating the master model from a primary computer system to an alternate computer system, the computer system comprising:

means for receiving a master model geometric property, the master model geometric property being a volume or an area of the master model;

means for receiving a translated model geometric property, the translated model geometric property being a volume of the translated model when the master model geometric property is the volume of the master model, the translated model geometric property being an area of the translated model when the master model geometric property is the area of the master model; and

means for determining a Z score based on the master model geometric property and the translated model geometric property.

31. The computer system of claim 30 further comprising:

means for receiving a number of master model faces and a number of master model edges;

means for receiving a number of translated model faces and a number of translated model edges;

means for comparing the number of translated model faces to the number of master model faces; and

means for comparing the number of translated model edges to the number of master model edges.

32. The computer system of claim 30 further comprising means for comparing the determined Z score to a pre-selected value.

33. A computer-readable medium whose contents cause a computer system to determine a Z score, the Z score being associated with a translated computer model generated by translating a master computer model from a primary computer system to an alternate computer system, the Z score being determined by a method comprising:

receiving a master model geometric property;

receiving a translated model geometric property;

determining an accuracy probability based on the received translated model geometric property and the received master model geometric property;

determining an error factor based on the determined accuracy probability; and

determining a Z score based on the determined error factor.

34. The computer-readable medium of claim 33 wherein the determined Z score is calculated using an equation that is at least substantially similar to equation (3).

35. The computer-readable medium of claim 33 wherein the determined accuracy probability is calculated using an equation that is at least substantially similar to equation (1).

36. The computer-readable medium of claim 33 wherein the determined error factor is calculated using an equation that is at least substantially similar to equation (2).

37. The computer-readable medium of claim 33 wherein:

the received master model geometric property is a volume of the master model; and

the received translated model geometric property is a volume of the translated model.

38. The computer-readable medium of claim 33 wherein:

the received master model geometric property is an area of the master model; and

the received translated model geometric property is an area of the translated model.

39. The computer-readable medium of claim 33 wherein the received translated model geometric property is the same property as the received master model geometric property.